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D.S.

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Disc action disc thermostats are direct sensing thermostats used in modern day electronics temperature control applications.

Operating Range		Function	Differential	
F	C			
55 to 65	13 to 18	Opens	20°F	12°C
80 to 90	27 to 32	Opens	15°F	8°C
93 to 107	34 to 42	Closes	30°F	17°C
105 to 115	41 to 46	Opens	30°F	17°C
115 to 125	46 to 52	Opens	30°F	17°C
to 127	45 to 53	Closes	30°F	17°C
135 to 145	57 to 63	Opens	30°F	17°C
133 to 147	56 to 64	Closes	30°F	17°C
145 to 155	63 to 68	Opens	30°F	17°C
155 to 165	68 to 74	Opens	30°F	17°C
165 to 175	74 to 79	Opens	30°F	17°C
162 to 178	72 to 81	Closes	30°F	17°C
170 to 180	77 to 82	Opens	15°F	8°C
175 to 185	79 to 85	Opens	30°F	17°C
172 to 188	78 to 87	Closes	30°F	17°C
185 to 195	85 to 91	Opens	30°F	17°C
204 to 216	96 to 102	Opens	30°F	17°C
214 to 226	101 to 108	Opens	30°F	17°C
217 to 232	103 to 111	Closes	30°F	17°C
224 to 236	107 to 113	Opens	30°F	17°C
229 to 251	109 to 122	Closes	100°F	56°C
244 to 256	118 to 124	Opens	30°F	17°C
315 to 335	157 to 169	Opens	50°F	28°C

See data Note 2.

SNAP ACTION DISC THERMOSTATS

OPERATIONAL DATA: Type 430 thermostats use a bimetal disc for snap action, positive and instantaneous opening or closing of electric circuits. Available as limit switch to open on rise or a fan switch to close on rise.

TYPICAL APPLICATIONS: Temperature control in — computers, business machines, telecommunications equipment, alarm circuits, instrumentation, medical electronics, microwave ovens, power supplies, fan controls and temperature limits/controls.

ELECTRICAL RATINGS

LOAD	120 VAC	240 VAC	277 VAC
Resistive	15 Amps	10 Amps	8.7 Amps
Inductive	5.6 FLA-34.8 LRA	2.9FLA-17.4 LRA	—
Pilot Duty	125 VA	125 VA	125 VA

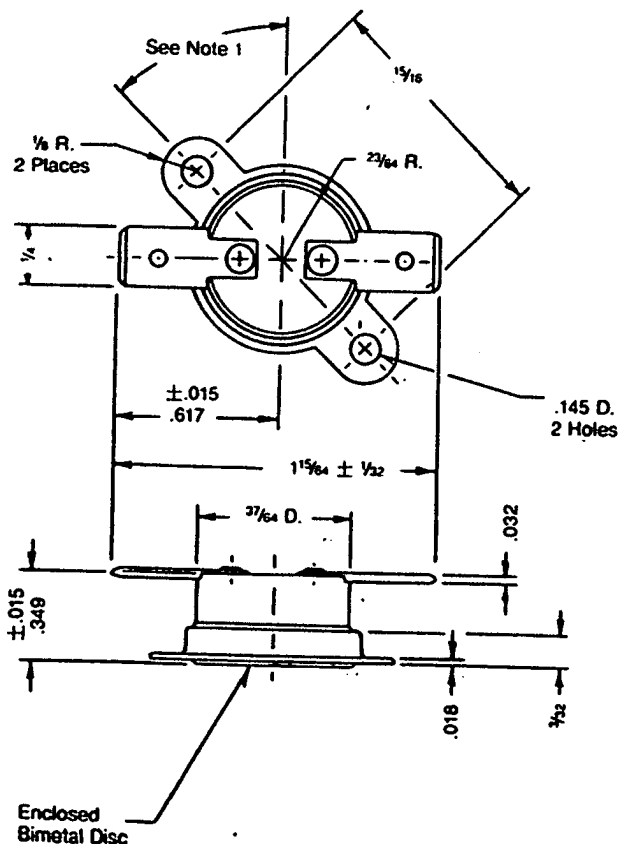
U.L. recognized unit.

All 100,000 cycle ratings. 430 Recognized U.L. file. MH 6883 and E23581 C.S.A. 12619, and 20339. A.G.A. approved. Consult factory for special load requirements.

MOUNTING DATA: All units come with 1/4" quick connect termination.

STANCOR's special termination allows solder connection of 18 GA wire (and smaller) through the detent hole of the quick connect terminal (other terminations are available on special order).

NOTE 1 — STANCOR's loose ring mounting allows rotation to any position. Unit clamps down when hold down screws are positioned.
Wt. .2 oz (Approx)



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Chemical Sensors

XGS1100 CO Sensor User Guide

This User Guide accompanies Motorola engineering prototypes of the XGS1100 carbon monoxide sensor. Reproduction and distribution of any part of this document is restricted by Motorola.

OUTLINE

General Description
Test Set Up and Procedure
Appendix A: Preliminary Performance Characteristics
Appendix B: Preliminary Specifications
Appendix C: Package Drawings

GENERAL DESCRIPTION

The XGS1100* carbon monoxide (CO) sensor is designed for use in residential CO gas detectors. The XGS1100 structure consists of a thin-film, doped tin-oxide (SnO_2) layer over an embedded heater layer that raises the temperature of the SnO_2 film to be sensitive to a wide range of CO gas concentrations. A precisely micromachined silicon diaphragm reduces heat loss through conduction and enables reduced power consumption (Figure 1).

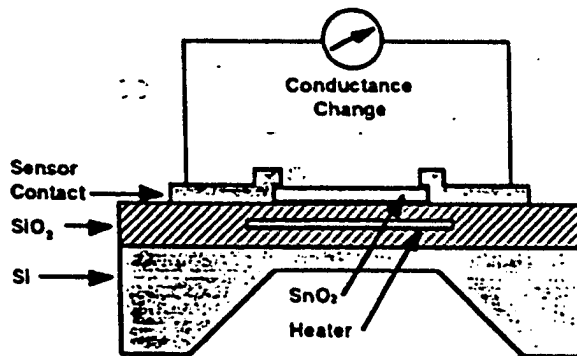


Figure 1. XGS1100 CO Sensor Cross-Sectional Schematic

The sensor package has four pins, two for heater control (pins 1 and 3) and two for measurement of the gas sensitive SnO_2 layer (pins 2 and 4), see Figures 2 and 3. Pin 1 is ground for the heater.

It is very important to maintain the SnO_2 layer at a predetermined temperature for optimum CO sensitivity. The temperature of the heater, and thus the SnO_2 layer, is dependent on the heater voltage (V_H) and the heater current (I_H). In the presence of CO gas the resistance of the SnO_2 layer decreases with higher concentrations. Please see the specifications in Appendix B for circuit requirements.

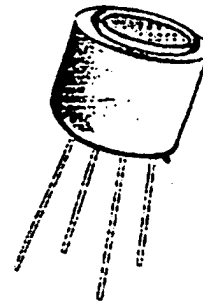


Figure 2. Four-Pin T0-39 Package with Nylon Shell

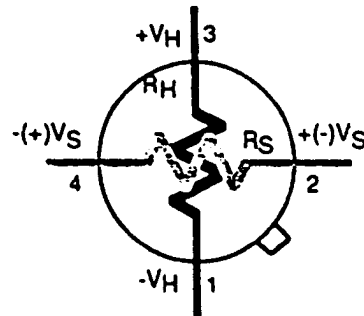


Figure 3. XGS1100 Equivalent Circuit and Pin Connections (Top View)

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CONFIDENTIALITY AGREEMENT

A-1

This AGREEMENT made and entered into by and between DAVID SOLAK (hereinafter referred to as INNOVATOR), and HARSHAW RESEARCH, INCORPORATED, a company considered for the purpose of this agreement an expert in the field of Market Development (hereinafter referred to as EVALUATOR);

WHEREAS INNOVATOR is in possession of certain confidential and proprietary information and/or intellectual properties relating to project applications for SAFETY TREE "IS" (hereinafter referred to as "confidential and proprietary information of INNOVATOR"); and

WHEREAS EVALUATOR is desirous of receiving such confidential and proprietary information of INNOVATOR for the sole purpose of evaluating same.

NOW, THEREFORE, in consideration of the premises and the mutual promises and covenants of the parties, the parties hereto have agreed and do hereby agree as follows:

I

EVALUATOR will not, without the prior written consent of INNOVATOR, use or disclose to any other person, firm or corporation any information disclosed to EVALUATOR under the terms of this agreement. EVALUATOR shall be under no obligation to maintain confidential any information which:

- (a) EVALUATOR can show was in its possession at the time of disclosure thereof by INNOVATOR to EVALUATOR and was not acquired, directly or indirectly, from INNOVATOR or others with whom INNOVATOR has a contractual agreement; or
- (b) was acquired by EVALUATOR from another who had no confidential commitment to INNOVATOR with respect to same or did not acquire such information, directly or indirectly, from INNOVATOR; or
- (c) becomes, through no fault of EVALUATOR, a part of the public domain by publication or otherwise.

II

All plans, drawings, photographs, prints, computer programs, samples, data, equipment, formulae, parts, models or other documents or materials furnished by INNOVATOR to EVALUATOR shall remain the property of INNOVATOR and same shall be deemed in the custody of and as bailment to EVALUATOR only for the limited purposes specified herein and shall be returned to INNOVATOR, along with any copies or reproductions thereof, upon demand by INNOVATOR.

EVALUATOR will not, without the prior written consent of INNOVATOR, use, simulate, disclose, reproduce or copy, or permit the use, simulation, disclosure, reproduction or copying of any of such documents or materials.

III

Nothing contained in the Agreement or any disclosure hereunder shall be construed as granting to EVALUATOR any license or other right in or to the information so disclosed or to any patent or patent application relating thereto.

IV

This Agreement shall be interpreted, construed and enforceable in accordance with the laws of the State of Kansas regardless of the place of execution hereof or the place of performance of any portion hereof.

IN WITNESS WHEREOF the parties hereto executed this agreement in duplicate on this 15 day of July, 1992.

INNOVATOR:

By: [Signature]

Title: [Signature]

EVALUATOR: Harshaw Research, Incorporated

By: [Signature]

Title: President



U.S. CORPORATE HEADQUARTERS:

LINX TECHNOLOGIES, INC.

**575 S.E. ASHLEY PLACE
GRANTS PASS, OR 97526**

Phone: (541) 471-6256

FAX: (541) 471-6251

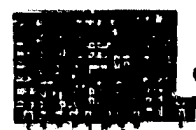
<http://www.linxtechnologies.com>

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HIGH PERFORMANCE RF MODULE TXM-900-HP-II



A-3

HP SERIES-II TRANSMITTER MODULE DESIGN GUIDE

DESCRIPTION:

The HP Series-II transmitter module is designed for the cost-effective, high-performance wireless transfer of analog or digital data, in the popular 902-928MHz band. The transmitter offers eight selectable channels and, when paired with an HP Series-II receiver, is capable of transmitting analog and digital information for distances of up to 1000 ft. (under optimal conditions). To assure robust performance, the transmitter employs FM/FSK modulation and an advanced microprocessor-controlled synthesized architecture. Like all Linx modules, the HP Series-II requires no tuning and in most cases no external RF components (*except an antenna*), making integration straightforward even for engineers lacking previous RF experience.

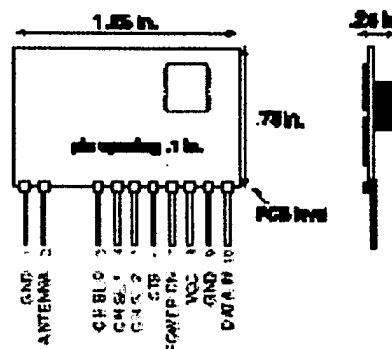


Figure 1: Physical Dimensions

FEATURES:

- 8 Binary Selectable Transmission Frequencies
- FM/FSK Modulation For Noise Immunity
- Cost-Effective
- Precision Synthesized Frequency Reference
- Direct Analog/Serial Interface
- High Data Rate (50Kbps max.)
- Can Be Used To Transmit Analog (Including Audio) or Digital Data
- Wide Supply Range (2.7-16V DC)
- Power-Down & CTS Functions
- No Production Tuning
- No External RF Components Required (Except Antenna)
- FCC Compliant Output Power (0dBm typical)

APPLICATIONS INCLUDE:

- Continuous Data Transfer
- Home/Industrial Automation
- Wireless Networking
- Remote Control
- Remote Access
- Remote Monitoring/Telemetry
- Fire/Security Alarms
- Long-Range RFID
- High-Quality Wireless Audio
- Analog Signal Transfer
- General Wire Elimination

ORDERING INFORMATION

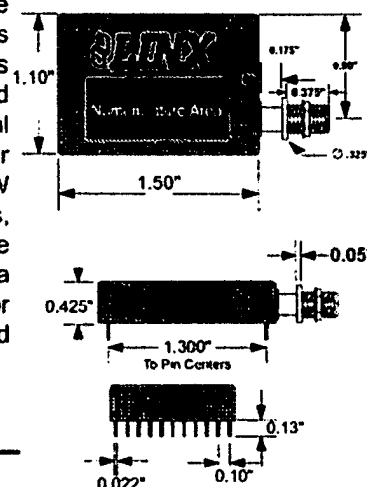
PART #	DESCRIPTION
MDEV-900-HP-II	Evaluation Kit 900 MHz
TXM-900-HP-II	Transmitter 900 MHz
RXM-900-HP-II	Receiver 900 MHz

SC-PA SERIES TRANSCEIVER MODULE DESIGN GUIDE

DESCRIPTION:

The PA version of Linx popular SC Series greatly reduces the time and expense of making a product wireless. This is because the transceiver module is pre-approved by the FCC when used with the appropriate proprietary antennas. The TR-XXX-SC-PA transceiver module is designed for the cost-effective, bi-directional transfer of wireless information. The Transceiver utilizes an advanced synthesized superhet architecture and has direct interface for analog or digital information, UART-compatible data output, RSSI, low power consumption, wide operational voltage, on-board TX/RX switch, SAW front-end filter, and many other useful features. Fast turnaround times, along with the support for data rates to 33.6Kbps, make the transceiver suitable for a wide range of applications. Housed in a compact through-hole package, the transceiver requires no tuning or external RF components (except antenna), allowing for straightforward application, even by engineers lacking previous RF experience.

PACKAGE OUTLINE



FEATURES

- FCC precertified for immediate integration
- Direct interface for analog or digital information
- Precision crystal-controlled synthesized architecture
- Transparent serial input
- UART-compatible data output
- Built-in data squelching
- High data-rate: up to 33,600bps
- Wide-range analog capability including audio
- Single-antenna-ready (No TX/RX switch required)
- Differential LO dramatically reduces unintended radiation
- Output power can be programmed with an external resistor
- Good sensitivity (-94dBm typical at 10⁻⁵ BER)
- SAW filter on front end for superior out-of-band rejection
- Received signal strength indication
- Fast start-up and turnaround time
- Wide input voltage range (2.7 to 13 VDC)
- Very low power consumption (as low as 12 mA)
- Power-down mode - 50µA max (V_{CC} @ 5V)

APPLICATIONS

- Small Area Networks
- Wireless RS:232/485 Modems
- 2-Way Paging
- Remote Control W/ Confirmation
- Telemetry
- Data Collection
- Home/Industrial Automation
- Long-Range RFID
- Robotics
- Wire Elimination

ORDERING INFORMATION

PART #	DESCRIPTION
TR-XXX-SC-PA	SC-PA Transceiver
XXX=916MHz	

MOTOROLA SC (LOGIC)

57E D

6367252 0090249 09T

MOT4

MOTOROLA

SEMICONDUCTOR

TECHNICAL DATA

Advance Information**Photoelectric Smoke Detector
with I/O
For Battery-Powered Applications**

The CMOS MC145010 is an advanced smoke detector component containing sophisticated very-low-power analog and digital circuitry. The IC is used with an infrared photoelectric chamber. Detection is accomplished by sensing scattered light from minute smoke particles or other aerosols. When detection occurs, a pulsating alarm is sounded via on-chip push-pull drivers and an external piezoelectric transducer.

The variable-gain photo amplifier allows direct interface to IR detectors (photo-diodes). Two external capacitors C1 and C2, C1 being the larger, determine the gain settings. Low gain is selected by the IC during most of the standby state. Medium gain is selected during a local-smoke condition. High gain is used during pushbutton test. During standby, the special monitor circuit which periodically checks for degraded chamber sensitivity uses high gain, also.

The I/O pin, in combination with V_{SS}, can be used to interconnect up to 40 units for common signaling. An on-chip current sink provides noise immunity when the I/O is an input. A local-smoke condition activates the short-circuit-protected I/O driver, thereby signaling remote smoke to the interconnected units. Additionally, the I/O pin can be used to activate escape lights, enable auxiliary or remote alarms, and/or initiate auto-dialers.

While in standby, the low-supply detection circuitry conducts periodic checks using a pulsed load current from the LED pin. The trip point is set using two external resistors. The supply for the MC145010 can be a 9 V battery.

A visible LED flash accompanying a pulsating audible alarm indicates a local-smoke condition. A pulsating audible alarm with no LED flash indicates a remote-smoke condition. A beep or chirp occurring virtually simultaneously with an LED flash indicates a low-supply condition. A beep occurring half-way between LED flashes indicates degraded chamber sensitivity. A low-supply condition does not affect the smoke detection capability if V_{DD} ≥ 6 V. Therefore, the low-supply condition and degraded chamber sensitivity can be further distinguished by performing a pushbutton (chamber) test.

- Complies with the UL217 and UL268 Specifications
- Operating Voltage Range: 6 to 12 V
- Operating Temperature Range: -10 to 60°C
- Average Supply Current: 12 μ A
- Power-On Reset Places IC in Standby Mode (Non-Alarm State)
- Electrostatic Discharge (ESD) and Latch Up Protection Circuitry on All Pins
- Chip Complexity: 2000 FETs, 12 NPNs, 16 Resistors, and 10 Capacitors

MC145010P SUPPLY
PLASTIC DIP
CASE 088DW SUPPLY
SOP
CASE 7810**ORDERING INFORMATION**

MC145010P Plastic DIP
MC145010DW SOP Package

PIN ASSIGNMENT

C1	1	18	TEST
C2	2	16	LOW SUPPLY
DETECT	3	14	V _{CC}
STRB	4	13	I/O
V _{DD}	5	12	IR
IRSD	6	11	LED
I/O	7	10	FEEDBACK
DRIVE	8	9	SEVER

This document contains information on a new product. Specifications and information herein are subject to change without notice.

MOTOROLA CMOS APPLICATION-SPECIFIC DIGITAL-ANALOG INTEGRATED CIRCUITS

LM1871 RC Encoder/Transmitter

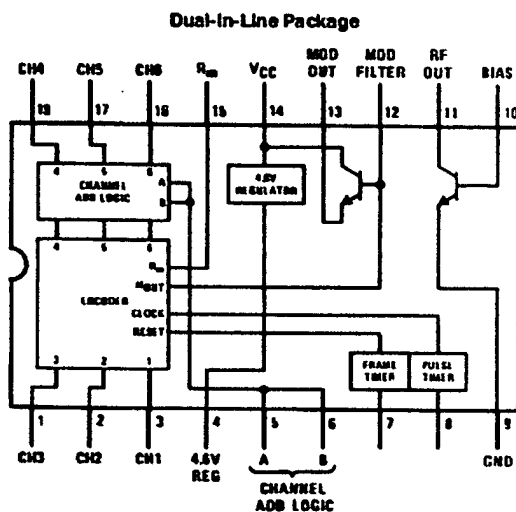
General Description

The LM1871 is a complete six-channel digital proportional encoder and RF transmitter intended for use as a low power, non-voice, unlicensed communication device at carrier frequencies of 27 MHz or 49 MHz with a field strength of 10,000 $\mu\text{V}/\text{meter}$ at 3 meters. In addition to radio controlled hobby, toy and industrial applications, the encoder section can provide a serial input of six words for hard wired, intra-red or fiber optic communication links. Channel add logic is provided to control the number of encoded channels from three to six, allowing increased design flexibility. When used with the LM1872 RC receiver/decoder, a low cost RF linked encoder and decoder system provides two analog and two ON/OFF decoded channels.

Features

- Low current 9V battery operation
- On-chip RF oscillator/transmitter
- One timing capacitor for six proportional channels
- Programmable number of channels
- Regulated RF output power
- External modulator bandwidth control
- On-chip 4.6V regulator
- Up to 80 MHz carrier frequency operation

Block and Connection Diagram



Top View

Order Number LM1871N
See NS Package Number N18A

TL/H/7911-1

LM1872 Radio Control Receiver/Decoder

General Description

The LM1872 is a complete RF receiver/decoder for radio control applications. The device is well suited for use at either 27 MHz, 49 MHz or 72 MHz in controlling various toys or hobby craft such as cars, boats, tanks, trucks, robots, planes, and trains. The crystal controlled superhet design offers both good sensitivity and selectivity. When operated in conjunction with the companion transmitter, LM1871, it provides four independent information channels. Two of these channels are analog pulse width modulated (PWM) types, while the other two are simple ON/OFF digital channels with 100 mA drive capability. Either channel type can be converted to the other form through simple external circuitry such that up to 4 analog or up to 4 digital channels could be created. Few external parts are required to complement the self-contained device which includes local oscillator, mixer, IF detector, AGC, sync output drivers, and all decoder logic on-chip.

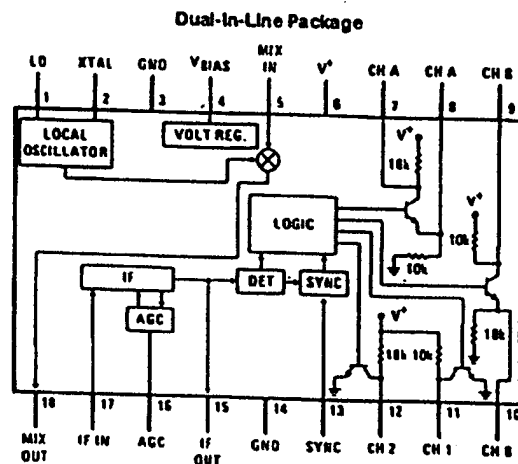
Features

- Four independent information channels; two analog and two digital
- Completely self-contained
- Minimum of external parts
- Operation from 50 kHz to 72 MHz
- Highly selective and sensitive superhet design
- Operates from four 1.5V cells
- Excellent supply noise rejection
- 100 mA digital output drivers
- Crystal controlled
- Interfaces directly with standard hobby servos

Applications

- Toys and hobby craft
- Energy saving, remotely switched lighting systems
- Burglar alarms
- Industrial and consumer remote data links
- IR data links
- Remote slide projector control

Circuit Block and Connection Diagram



Bottom View
Order Number LM1872N
See NS Package Number N18A

TLN/7912-1

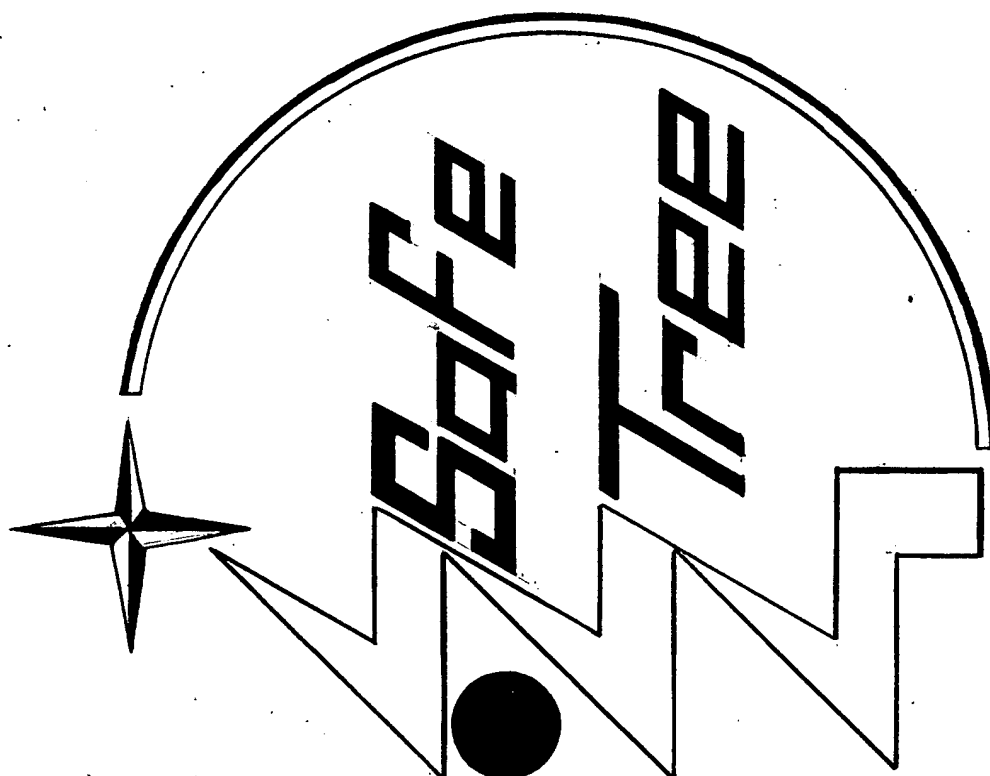
LM1872 R:

Control Receiver/Decoder

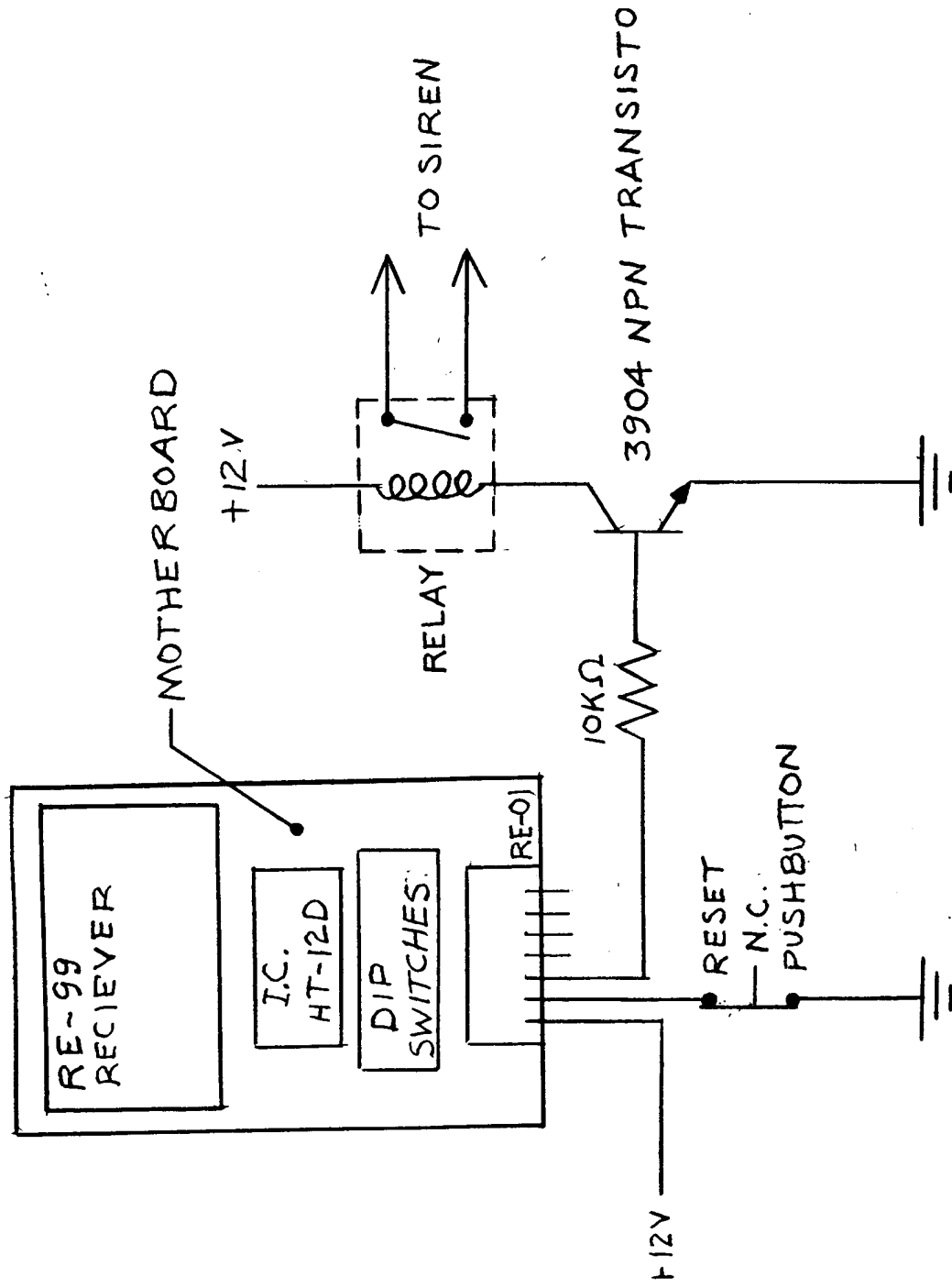
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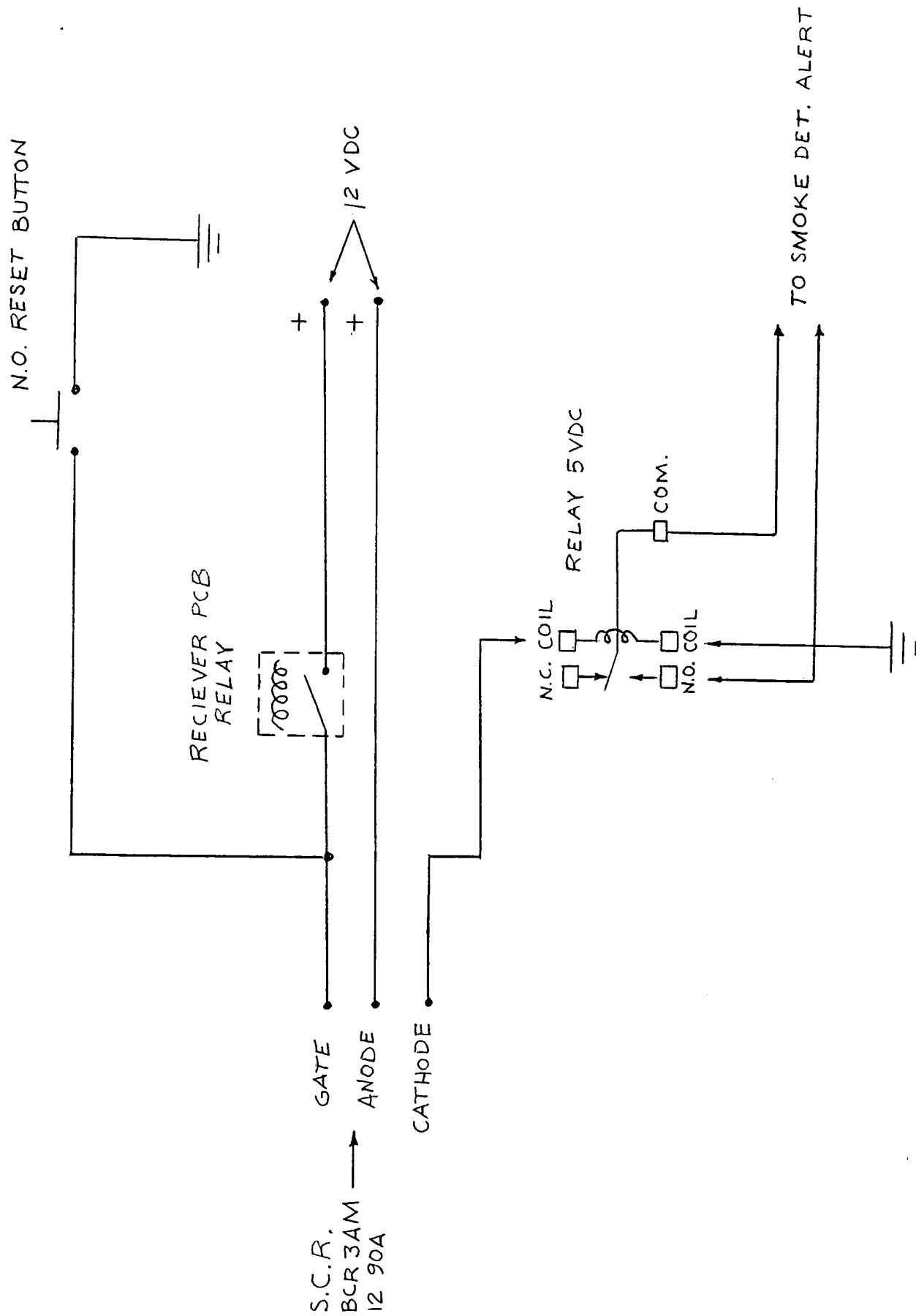
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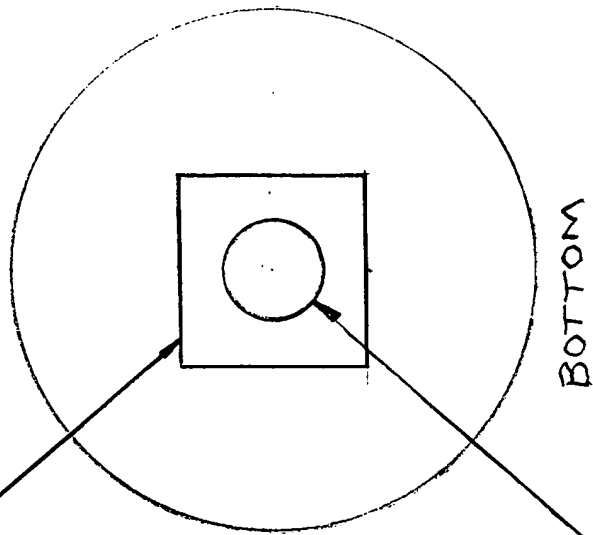
LATCHING CIRCUIT





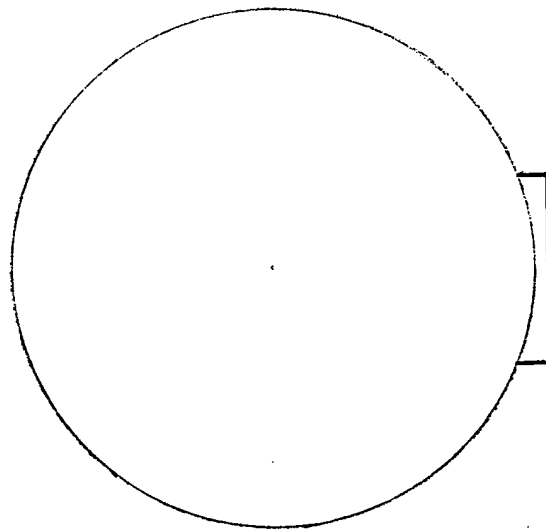
LATCHING CIRCUIT

NON-HALOGEN, FLAME
RESISTENT, THERMOPLASTIC



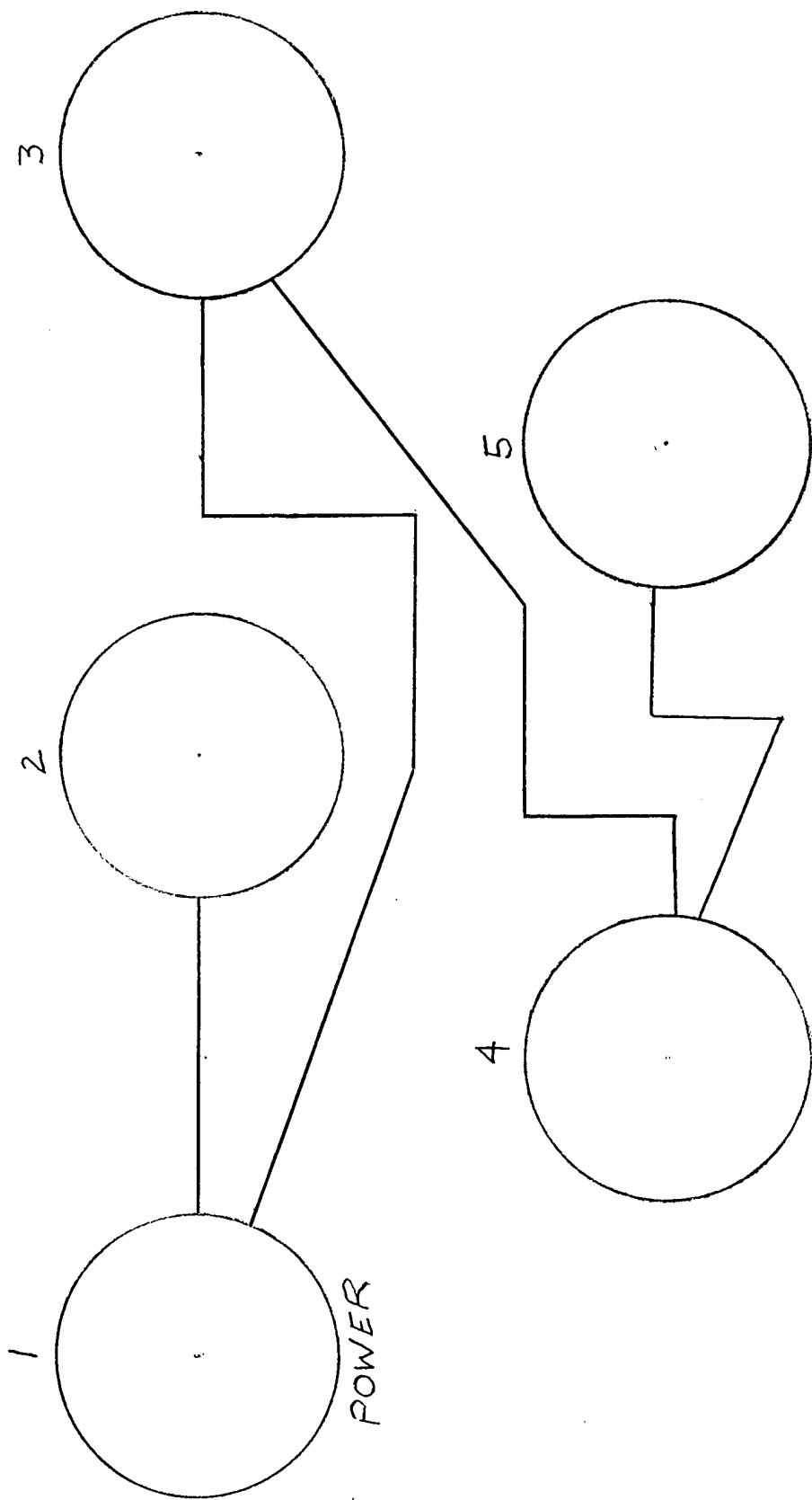
BOTTOM

SNAP DISC THERMOSTAT



SIDE

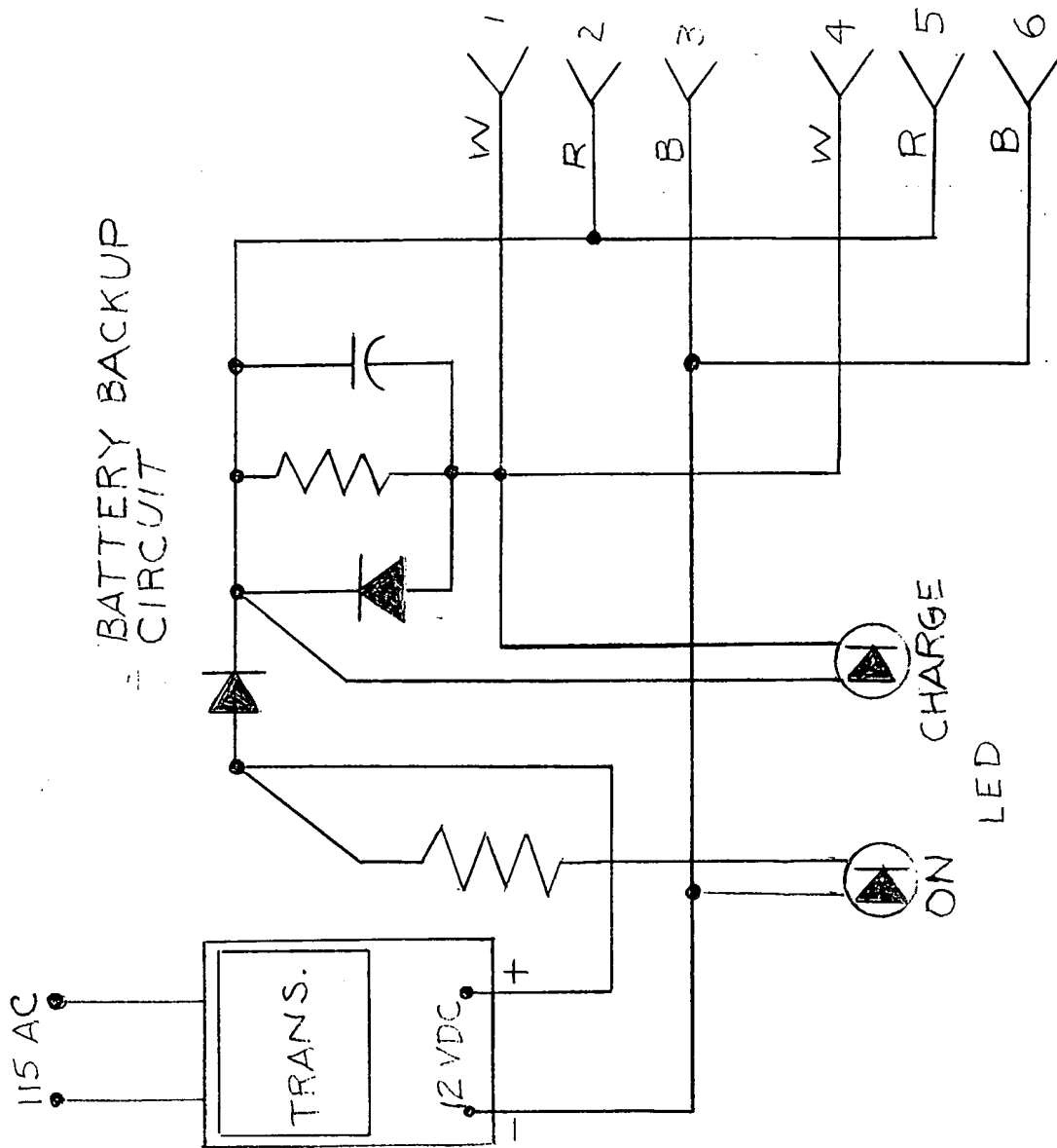
HEAT DETECTOR BULB



EACH WIRE = 3 CONDUCTOR
CABLE

BULB PLAN VIEW

COPIES



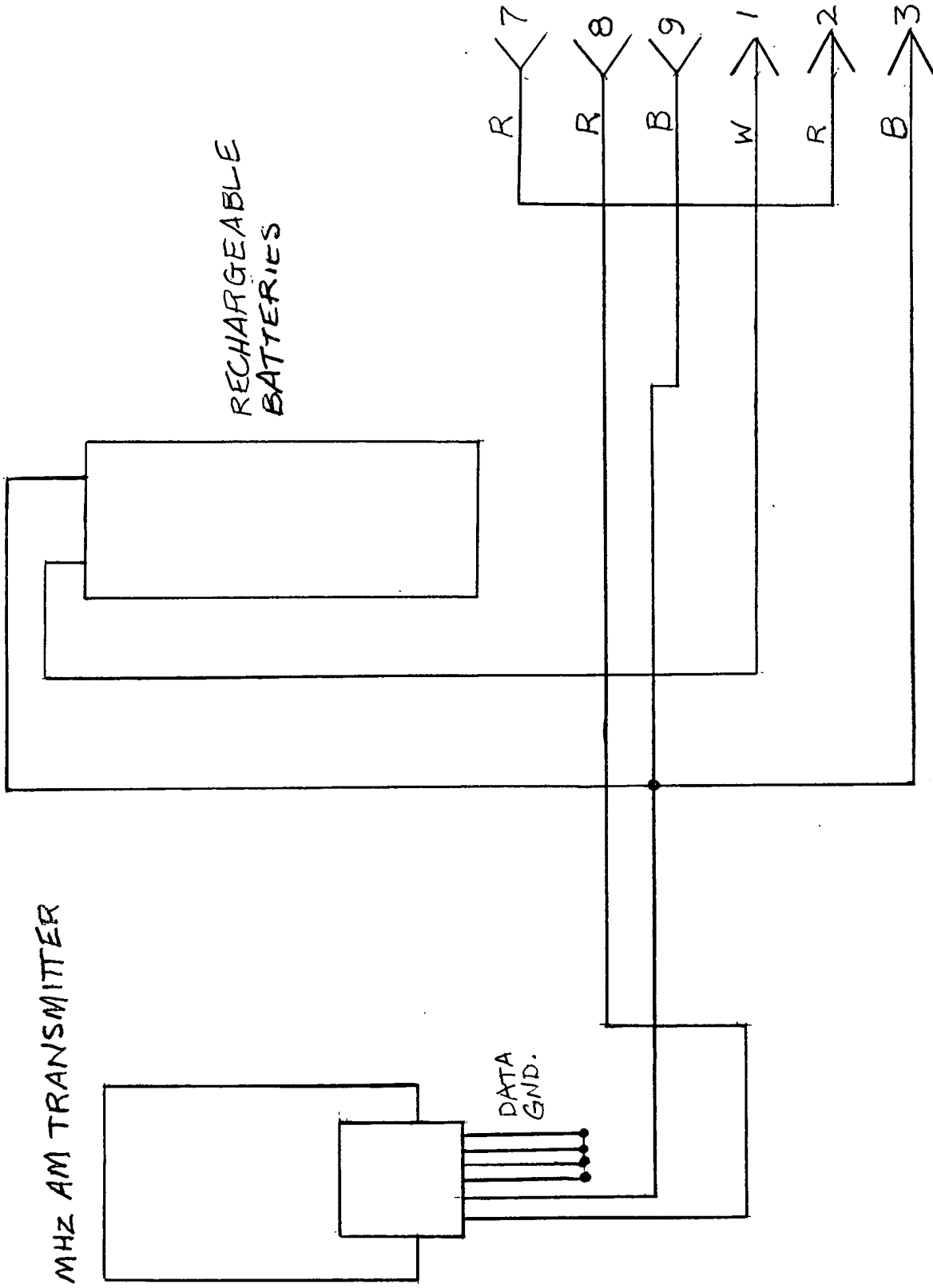
BULB #1

300 MHz AM TRANSMITTER

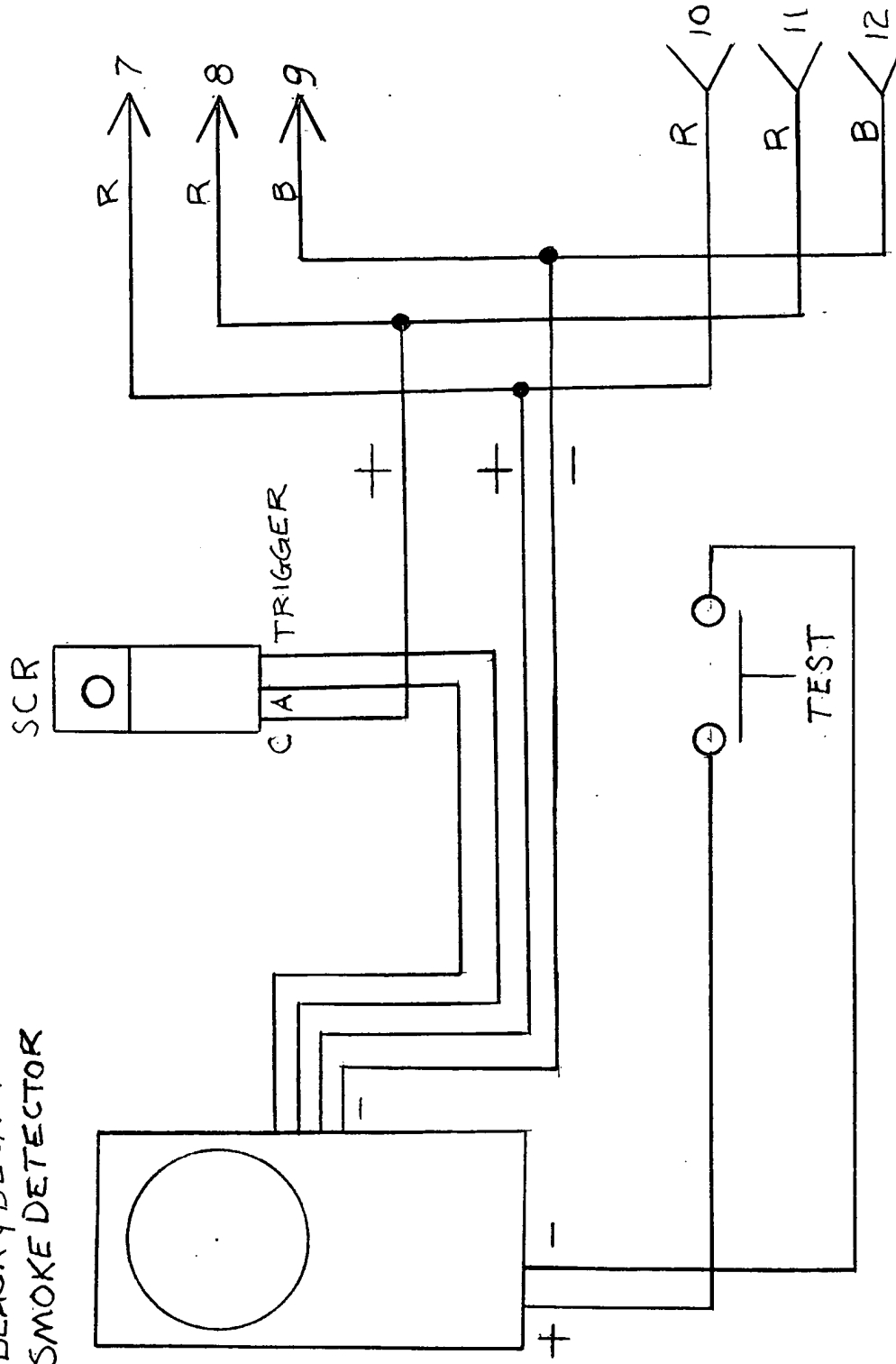
RECHARGEABLE BATTERIES

DATA
GND.

BULB #3

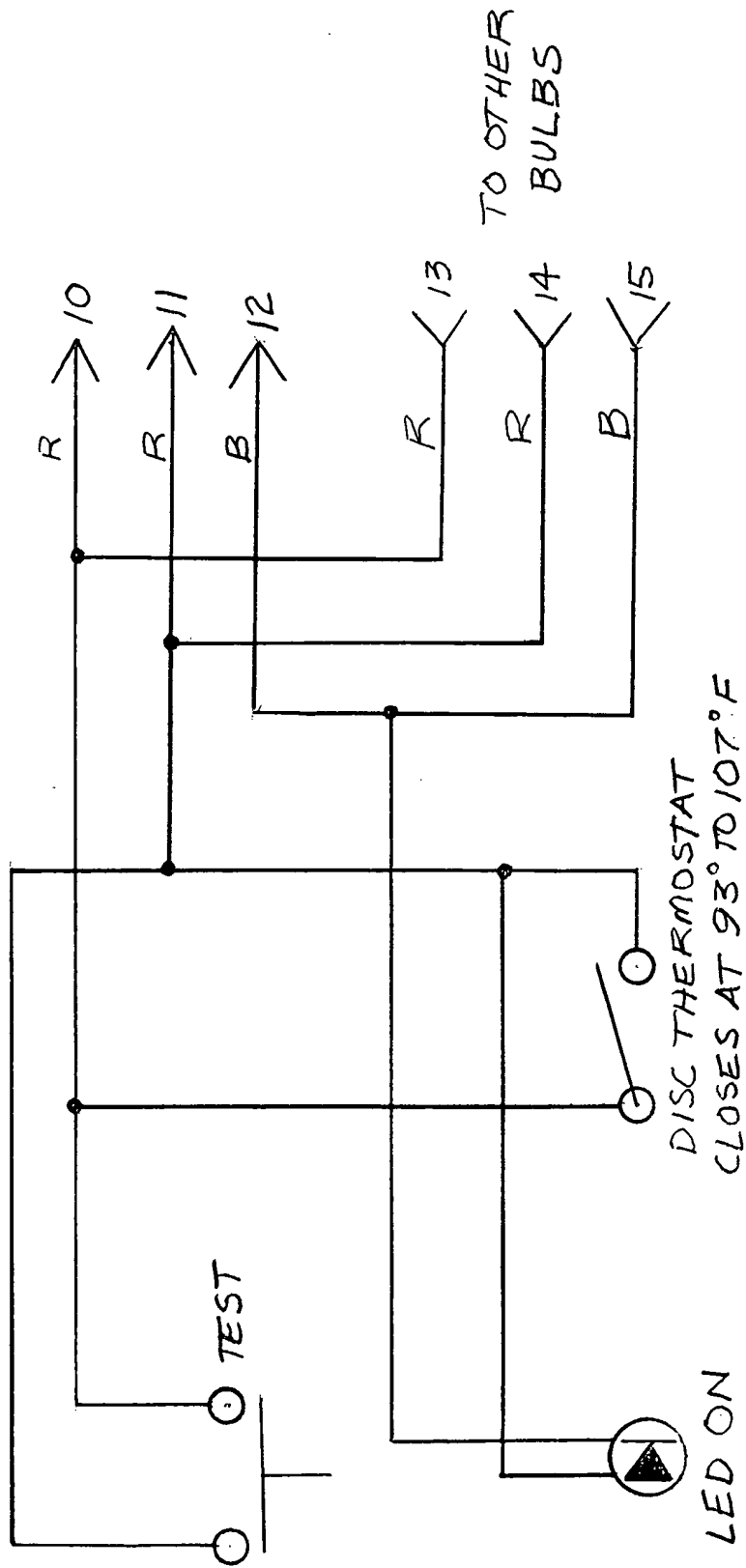


BLACK & DECKER SMOKE DETECTOR

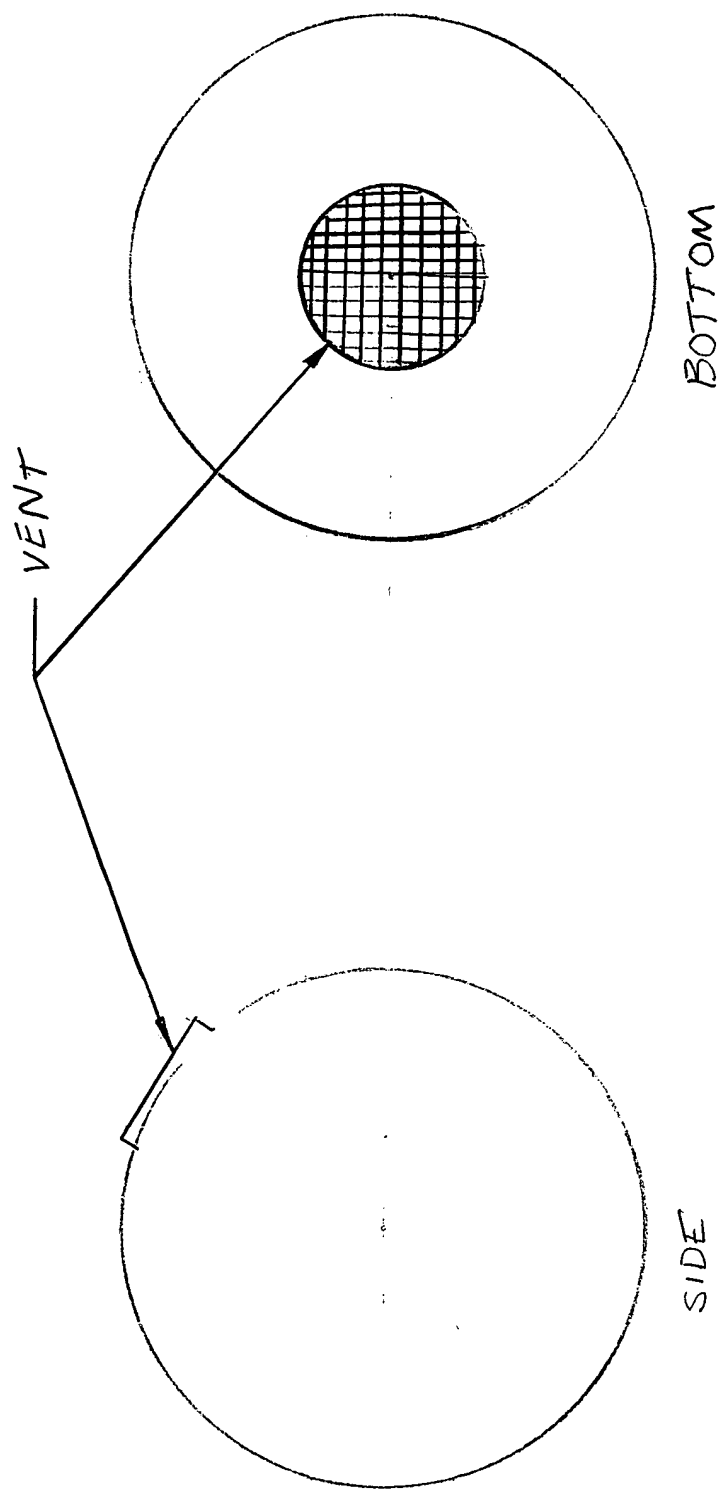


C=CATHODE
A=ANODE

BULB # 4

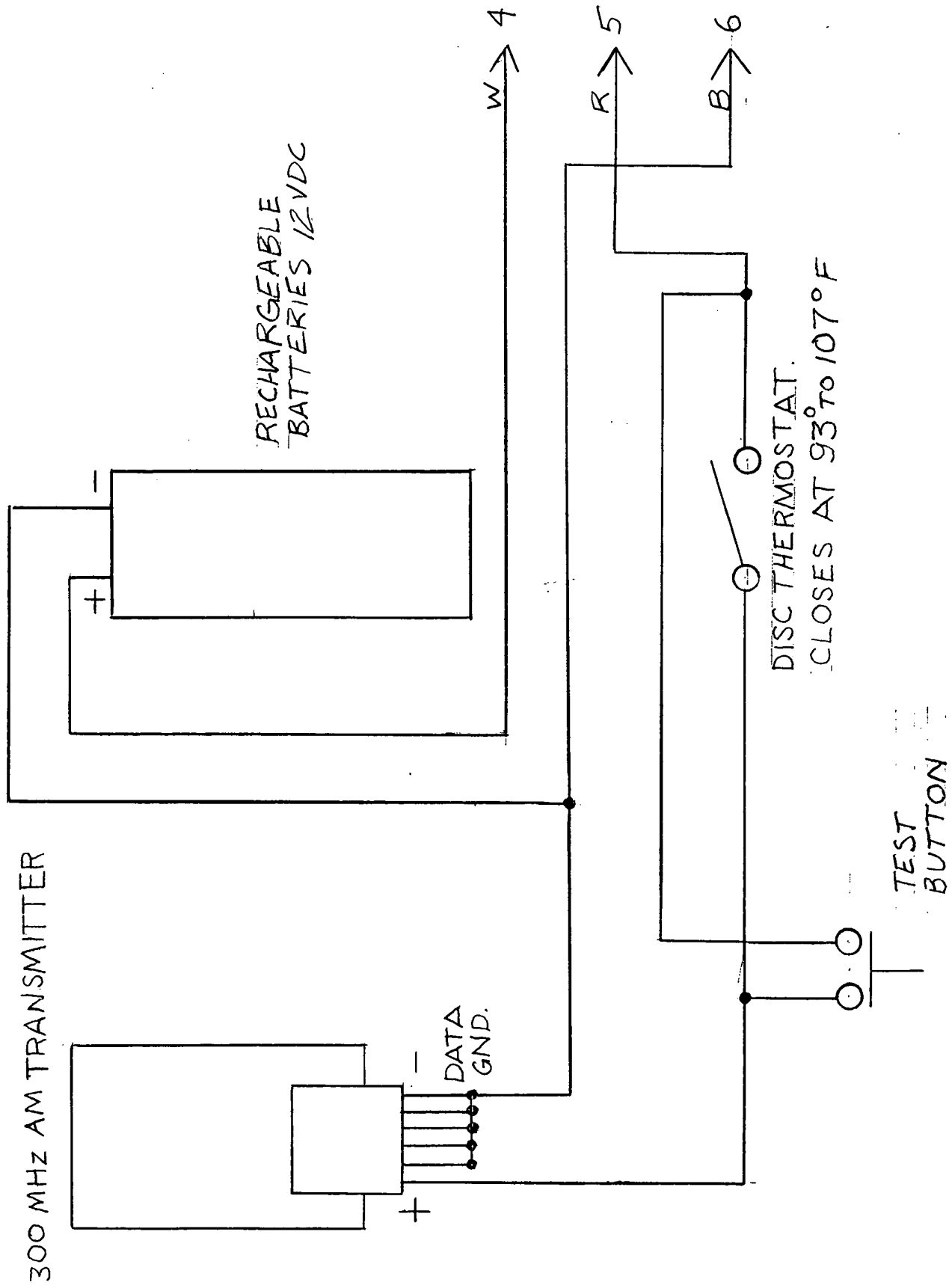


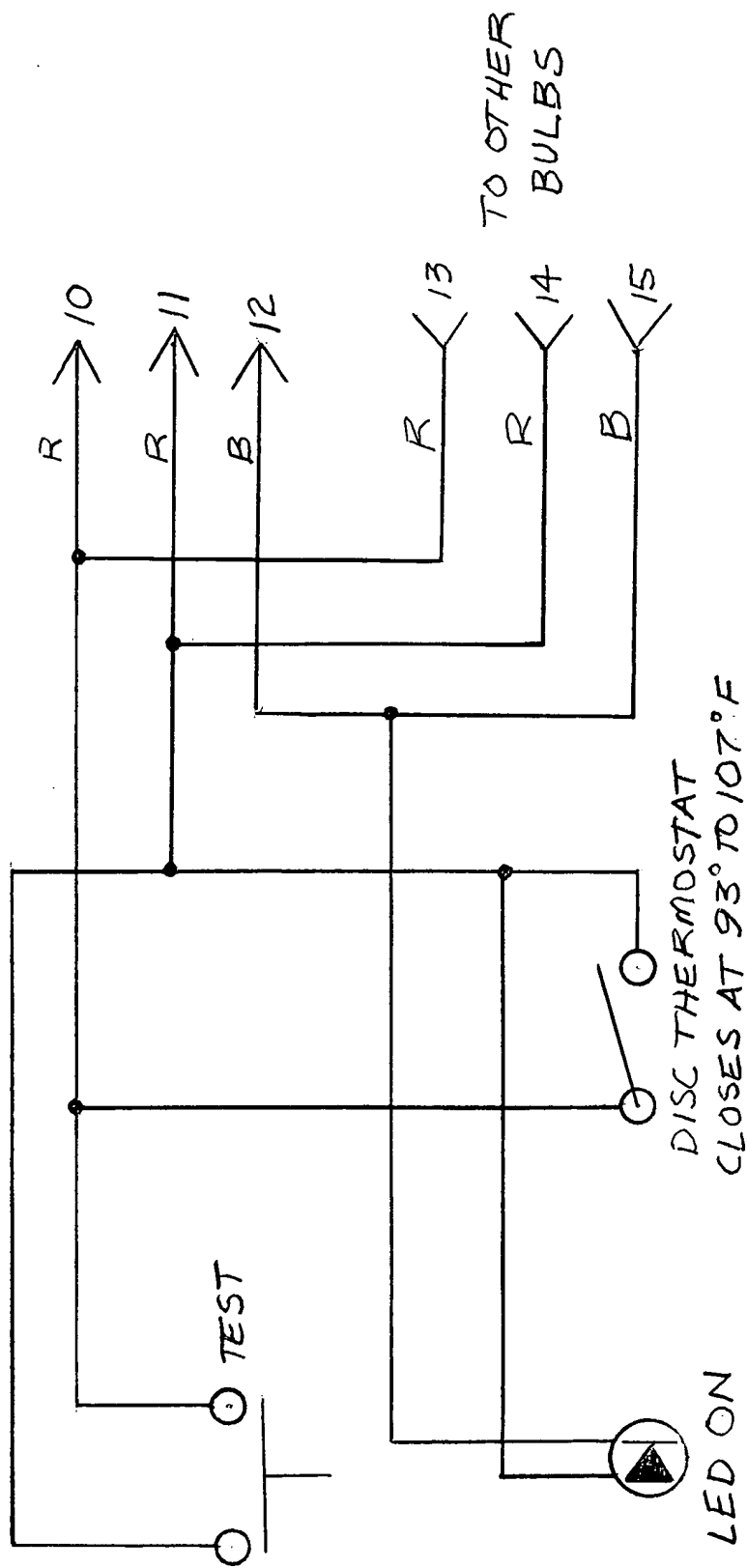
BULB #5



SMOKE DETECTOR BULB

BULB #2





BULB #5

